

PATENT APPLICATION OF
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FOR
INTEGRATED DELIVERY DEVICE

BACKGROUND-FIELD OF INVENTION

The present invention relates generally to a device for containing and delivering a fluid. More specifically the present invention is an integrated device that is both a container and an applicator for a small quantity of viscous fluid.

BACKGROUND-DESCRIPTION OF RELATED ART

Containers and applicators for small quantity of viscous fluids are virtually non-existent, particularly for minute quantity of viscous fluid. Single dose applications and samples generally only require a small quantity of viscous fluid to be dispensed and applied. However, due to lack of economical and efficient small container and applicators, most containers and applicators for small quantity of viscous fluid are much larger than necessary to contain and apply the small

quantity of the viscous fluid required. Typically, the remaining viscous fluid must be discarded or the content will risk contamination due to repeated exposures to the applicator or the user.

Therefore, an economical and efficient container and applicator is desired that will enclose a small to minute quantity of a viscous fluid and extract virtually all of the viscous fluid from the container for application.

SUMMARY OF THE INVENTION

The present invention is an integrated delivery device that is both a container and an applicator for small quantity of fluids. The integrated delivery device is particularly suitable for viscous fluids. The integrated delivery device comprises of two slidably engaged sections with matching concave and convex surfaces wherein a small quantity of viscous fluid is enclosed between the two sections. When the two sections are urged toward each other, the small quantity of viscous fluid between the two sections is urged to exit through a channel in one of the two sections. The two sections will mate to form an integrated applicator that can be used to apply the extracted viscous fluid.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a perspective view of the preferred embodiment of the integrated delivery device.

Figure 2A shows the cross-sectional view of the preferred embodiment of the integrated delivery device at the initial position.

Figure 2B shows the cross-sectional view of the preferred embodiment of the integrated delivery device at the delivery position.

Figure 3 shows another embodiment of the integrated delivery device.

Figure 4 shows another embodiment of the integrated delivery device.

Figure 5 shows another embodiment of the integrated delivery device.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 shows a perspective view of the preferred embodiment of the integrated delivery device. In the preferred embodiment, the integrated delivery device comprises of two small slidably engaged sections **1, 2** each with a rounded end **3, 4** and with a matching concave or convex surfaces wherein a small quantity of viscous fluid **5** such as a cream or lip coloring is enclosed between the two sections **1, 2**. The surfaces on the rounded ends **3, 4** may have multiple rounded protrusions **6** to assist in grasping the integrated delivery device and also in spreading and massaging the user's hands during application of the cream.

One section **1** has a cylindrical protrusion **7** that has a rounded end wherein the hole **8** defined by the cylindrical protrusion **7** is open at the rounded end and terminates at the other end in a closed and rounded terminal. The other section **2** has a recess **9** that closely matches the cylindrical protrusion **7** of the first section **1** with a matching protrusion **10** that engages the hole **8** defined by the cylindrical protrusion **7** in the first section **1**. The matching protrusion **10** of the second section **2** has a small channel **11** formed through its length that will direct the viscous fluid **5** from the first section **1** into and out of the second section **2**.

When the two sections **1, 2** are urged toward each other, the small quantity of viscous fluid **5** between the two sections **1, 2** is urged from the first section **1** into the second section **2** through the small channel **11** and exit through a hole **12** in the second section **2**. The hole **12** may be covered by a removable film that may be made of paper, plastic, aluminum, or any other

suitable material. The two sections **1, 2** will mate to form an integrated applicator that can be used to apply the extracted viscous fluid **5**.

Figure 2A shows the cross-sectional view of the preferred embodiment of the integrated delivery device at the initial position wherein the viscous fluid **5** is stored in the integrated delivery device. Figure 2B shows the cross-sectional view of the preferred embodiment of the integrated delivery device at the delivery position wherein the two sections **1, 2** of the integrated delivery device are urged toward each other and the viscous fluid **5** in the integrated delivery device is extracted through the channel **11** in the second section **2** and out through a hole **12** in the second section **2**. In this position, the integrated delivery device is in a compact form with the viscous fluid **5** extracted at the second section's **2** terminal.

Figure 3 shows the cross-sectional view of another embodiment of the integrated delivery device. In this embodiment, the integrated delivery device comprises of two small slidably engaged sections **13, 14** each with a rounded end **15, 16** and with a matching concave or convex surface wherein a small quantity of viscous fluid **17** such as a cream or lip coloring is enclosed between the two sections **13, 14**. The surfaces on the rounded ends **15, 16** may have multiple rounded protrusions to assist in grasping the integrated delivery device and also in spreading and massaging the user's hands during application of the cream.

One section **13** has a solid cylindrical protrusion **18**. The other section **14** has a recess **19** that closely matches the solid cylindrical protrusion **18** of the first section **13**. When the two sections **13, 14** are urged toward each other, the small quantity of viscous fluid **17** between the two sections **13, 14** is extracted from the integrated delivery device through a hole **20** in the second section **14**. The two sections **13, 14** will mate to form an integrated applicator that can be used to apply the extracted viscous fluid **17**.

Figure 4 shows a cross-sectional view of another embodiment of the integrated delivery device. This embodiment of the integrated delivery device comprises of two small slidably engaged sections **21**, **22** each with a rounded end **23**, **24** and with a matching concave or convex surface wherein a minute quantity of viscous fluid **25** such as a cream or lip coloring is enclosed between the two sections **21**, **22**. The surfaces on the rounded ends **23**, **24** may have multiple rounded protrusions to assist in grasping the integrated delivery device and also in spreading and massaging the user's hands during application of the cream.

One section **21** has a solid cylindrical protrusion **26** with a concave end **27** that will retain a viscous fluid **25** at the concave end **27**. The other section **22** has a recess **28** that closely matches the solid cylindrical protrusion **26** of the first section **21** with a convex surface **29** that closely matches the concave end **27** of the solid cylindrical protrusion **26** in the first section **21**. When the two sections **21**, **22** are urged toward each other, the minute quantity of viscous fluid **25** between the two sections **21**, **22** is extracted from the integrated delivery device through a hole **30** in the second section **22**. The two sections **21**, **22** will mate to form an integrated applicator that can be used to apply the extracted viscous fluid **25**.

Figure 5 shows another embodiment of the integrated delivery device. In this embodiment, the integrated delivery device comprises of two small slidably engaged sections **31**, **32** generally in the shape of elongated cylinders wherein a small quantity of viscous fluid **33** such as a cream or lip coloring is enclosed between the two sections **31**, **32**.

The first section **31** has a cylindrical recess **34** retaining the viscous fluid **33**. The second section **32** is approximately the same dimension as the cylindrical recess **34** in the first section **31**. The second section **32** has a small channel **35** formed through its length that will extract the viscous fluid **33** from the first section **31** out through the small channel **35**.

When the two sections **31, 32** are urged toward each other, the small quantity of viscous fluid **33** between the two sections **31, 32** is urged from the first section **31** to exit through the small channel **35**. The two sections **31, 32** will mate to form an integrated applicator that can be used to apply the extracted viscous fluid **33**.

Although the description above contains many specificities, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. Thus the scope of the invention should be determined by the appended claims and their legal equivalents, rather than by the examples given.